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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/585,472	06/02/2000	Michiaki Sakamoto	157330/99	6609

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EXAMINER	
RUDE, TIMOTHY L	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 01/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/585,472	SAKAMOTO, MICHIAKI	
	Examiner	Art Unit	
	Timothy L Rude	2871	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 December 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claims 1, 2, 6, and 7 are amended.

Claims 1 and 2 are objected to because of the following informalities: The recitation "stacking layer" is unclear relative a stack of layers comprising a passivation film and a color filter. Examiner suggests -- stack of layers --. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabe USPAT 6,162,654, in view of Zhong et al (Zhong) USPAT 5,994,721, Kashiwazaki et al (Kashiwazaki) USPAT 5,922,401, and Lee (Applicant's IDS entered 29 July 2002).

As to claims 1, 2, and 15, Kawabe discloses in Figure 8, an active matrix liquid crystal display (LCD) with a passivation layer, 7, over the TFT and under the color filter,

'41 (7 and 41 comprising Applicant's staking layer). Kawabe also discloses an alignment layer, 10, (Applicant's overcoat layer) disposed over the color filters.

Kawabe does not explicitly disclose a color filter disposed directly on the active matrix substrate, nor does Kawabe disclose removal of the passivation layer from the light transmission region.

Zhong discloses in Figures 6a and 6c, (col. 3, line 35 through col. 4, line 10 and col. 8, line 22 through col. 15, line 10) a conventional red-green-blue (RGB) active matrix liquid crystal display (LCD) configuration including a first substrate and a second substrate, at least one of the first and second substrates being transparent; a liquid crystal layer put between the first and second substrates; a color filter, said first substrate including a plurality of scanning lines; a plurality of signal lines crossing the scanning lines in a matrix manner; a plurality of thin film transistors formed at intersections of the scanning lines and signal lines, respectively; a pixel electrode connected to said plurality of thin film transistors, said second substrate including a counter electrode, liquid crystal molecules being driven by an electric field between said pixel electrode and said counter electrode to thereby make a display. Zhong discloses, in Figure 6c, (col. 3, line 35 through col. 4, line 10 and col. 8, line 22 through col. 15, line 10) a pixel electrode, 3, arranged on said color filter and connected to said thin film transistors through a contact hole provided in said color filter, 101; and gate insulating layers, 21, of said thin film transistors is removed in a light transmission region within pixels surrounded by said scanning lines and said signal lines.

Zhong does not explicitly disclose and does not preclude a passivation film for protecting said thin film transistors (TFTs). The use of passivation films to protect TFTs is well known in the art of liquid crystals, and the use of overcoat layers to protect color filters (and to protect the LC material from contamination by the color filters) is well known in the art of liquid crystals.

Zhong is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to dispose color filters directly on the active matrix substrate in the light transmission region within pixels in order to achieve adequate color filter layer thickness to minimize pixel electrode capacitance (col. 6, lines 1-65, especially lines 36-40).

Kashiwazaki teaches in Figures 5A through 5K the method of removing the gate insulating film, 103, and the passivation film, 110, from the light transmission area and subsequently disposing the color filter, 113, directly onto the active matrix substrate, 101 (col. 20, line 52 through col. 21, line 37) to avoid defects such as color mixing and color irregularity (col. 21, lines 37-47).

Kashiwazaki is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to remove the gate insulating film and the passivation film from the light transmission area and subsequently disposing the color filter directly onto the active matrix substrate to avoid defects such as color mixing and color irregularity.

Lee teaches the use of an overcoat layer between the color filter and the ITO electrode layer. Motivations known in the art include, leveling, better adhesion of the

ITO layer, protection of the color filter, and reduced contamination of the LC material by the color filter (Abstract).

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify a RGB active matrix LCD configuration of Kawabe with the overcoat layer of Lee and a passivation layer by removing the gate insulating layer and the passivation layer from the light transmission region within pixels prior to depositing the color filter on the TFTs and directly on the active matrix substrate in order to achieve adequate color filter layer thickness to minimize pixel electrode capacitance of Zhong while avoiding defects such as color mixing and color irregularity per Kashiwazaki.

As to claim 3 and 8, Zhong teaches the use of a color filter around said contact hole that is thinner than the color filter in said light transmission region (Figure 6c).

As to claims 4, 5, 9 and 10, Zhong teaches the use of a color filter consisting of a photosensitive organic film (resist) with a color pigment or dye (col. 16, lines 43-46) that is substantially flat on the top surface (as illustrated in Figure 6c), therefore a difference in level generated on a surface of the organic film being not more than 0.3 μm.

As to claim 6, the conventional method of manufacturing a RGB active matrix liquid crystal display device comprises steps of: forming a plurality of scanning **lines** on a first substrate; forming a plurality of signal lines crossing the plurality of scanning lines

in a matrix manner; forming a plurality of thin film transistors at intersections of the plurality of scanning lines and the plurality of signal lines, respectively; forming a pixel electrode connected to said thin film transistors; forming a counter electrode on a second substrate; injecting liquid crystal between said first substrate and said second substrate and sealing the liquid crystals, wherein said method further comprising the steps of: forming a passivation film to protect each of said thin film transistors. The additional steps of removing part of a gate insulating layer and said passivation film of each of said tin film transistors in a region surrounded by said signal lines and said scanning lines; forming a color filter made of a photosensitive color resist; and forming a transparent conductive film are obvious given the structure.

As to claim 7, the conventional method of manufacturing a RGB active matrix liquid crystal display device comprises steps of: forming a plurality of scanning lines on a first substrate; forming a plurality of signal lines crossing the plurality of scanning lines in a matrix manner; forming a plurality of thin film transistors at intersections of the plurality of scanning lines and the plurality of signal lines, respectively; forming a pixel electrode connected to said thin film transistors; forming a counter electrode on a second substrate; injecting liquid crystal between said first substrate and said second substrate and sealing the liquid crystals, wherein said method further comprising the steps of: forming a passivation film to protect each of said thin film transistors. The additional steps of removing part of a gate insulating layer and said passivation film of each of said tin film transistors in a region surrounded by said signal lines and said

scanning lines; forming a color filter made of a photosensitive color resist; forming an overcoat layer on said color filter; patterning said overcoat laver; forming a contact hole by patterning said color filter while using said overcoat layer as a mask; and forming a transparent conductive film are obvious given the structure.

As to claim 11, Given the structure of Zhong (Figure 6c) and a passivation layer on the TFT, the vias, 35, formed in the color filters would necessarily be also formed in the passivation layer in order to allow electrical contact with source electrodes, 31.

As to claim 12, Zhong discloses a substantially flat color filter.

As to claim 13, Zhong discloses a gate insulation layer with a hole corresponding to the pixel opening that is filled with said color filter.

As to claim 14, Given the structure of Zhong (Figure 6c) and the passivation layer on the TFT of Kawabe, the color filter extends (as illustrated in Figure 6c) and it would cover said transistor with an intervention of said passivation film.

As to claim 16, Zhong discloses signal lines and a color filter terminating above the signal line in Figure 1.

As to claims 17-22, the method of manufacturing recitations of forming, providing, extending, etc. would have been obvious given the device structures above.

Response to Arguments

3. Applicant's arguments filed 30 April 2002 have been fully considered but they are not persuasive.

Applicant's ONLY arguments are as follows:

(1) The present invention comprises a stacking layer of a passivation layer and a color filter near the contact hole.

(2) In the present invention, a portion of the passivation layer is removed in a portion of the display area and a color filter is formed therein.

(3) Use of four (4) references, on its face, evidences Examiner's impermissible hindsight.

(4) Kawabe discloses forming the color filter on the pixel electrode.

(5) Kawabe does not teach or suggest an overcoat layer formed on a color filter.

(6) The combination would not be obvious because additional fabrication steps would be necessary.

(7) Kashiwazaki in combination with Zhong does not teach or suggest a stacking layer of passivation film and color filter near said contact hole.

(8) The examiner is engaging in prohibited hindsight.

(9) There is no teaching or suggestion of the claimed structure of substantially similar independent claims 1, 2, 6, and 7, as amended.

Examiner's responses to Applicant's ONLY arguments are as follows:

(1) It is respectfully pointed out that Kawabe teaches the use of a stacking layer of a passivation layer and a color filter near the contact hole per rejection above.

(2) It is respectfully pointed out that Kashiwazaki teaches a portion of the passivation layer is removed in a portion of the display area and a color filter is formed therein.

(3) It is respectfully pointed out that there is no limit to the number of references that may be used to show obviousness. Each secondary reference has the proper motivations to combine, per rejections above.

(4) It is respectfully pointed out that Kashiwazaki and Zhong are applied to the obviousness of the claimed pixel electrode on a color filter.

(5) It is respectfully pointed out that Lee is applied to show obviousness of the claimed overcoat layer formed on a color filter.

(6) It is respectfully pointed out that the combination would be obvious because of the motivations cited in the rejections above, despite any needed additional fabrication steps.

(7) It is respectfully pointed out that the primary reference, Kawabe, discloses a stacking layer of passivation film and color filter near said contact hole per rejections above.

(8) It is respectfully pointed out that the motivations for each secondary reference provide obvious motivation to combine, per rejections above. Hindsight is not required to support combination of the applied references.

(9) It is respectfully pointed out that despite amendments to claims 1, 2, 6, and 7, the claimed structure and methods are obvious given the structure, methods, and motivations of the applied references, per rejections above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

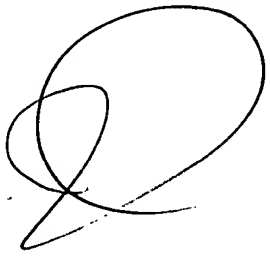
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (703) 305-0418. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-8745 for regular communications and (703) 308-7725 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

TLR
January 23, 2003

Timothy L Rude
Examiner
Art Unit 2871



JAMES DUDEK
PRIMARY EXAMINER